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The Analysis and Clustering of Navy Ratings Based on Social Interaction Characteristics:

A Literature Review and Conceptual Model

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Current job analysis methods do not produce results that adequately reflect the social interaction content of jobs. The objective of this research was to discover what is known about social interaction in work-related and organizational contexts that can be applied to job analysis. A search of the literature was used to develop a conceptual model for analyzing and classifying special work-related social interactions and the factors affecting them. The model also describes the ways consequent behaviors are perceived, measured, and evaluated.

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SUMMARY

Problem

Current job analysis methods do not produce results that adequately reflect the social interaction content of jobs. Including social interaction characteristics in job analysis, results might lead to revisions in Navy job classes and improved personnel administration programs.

Purpose

The research literature was reviewed to discover what is known about social interaction in work-related and organizational contexts that can be applied to job analysis.

Approach

The literature survey extended across several related fields: psychology, sociology, and communications. Specific questions asked were (1) "What is social interactive behavior?," (2) "How can social interactive behaviors be analyzed and classified?," and (3) "What factors affect social interaction in the work place?" After it became apparent that there was no directly applicable literature, the focus shifted to looking for the kinds of questions, variables, and perspectives that might help in developing a framework for measuring job-related social interactions.

Findings

Social interaction is typified by direct verbal exchange between two or more people occurring face-to-face or in some other real-time communication medium and includes both the manifest content and latent meanings of the communications. Two complementary perspectives (exchange and communications) have typified investigations of social interactive phenomena. They suggest several approaches to analyzing and classifying specific behaviors: functions of the interactions, descriptive characteristics (e.g., direction), power implications, and exchange characteristics. And two common sociological concepts, norm and role, are particularly helpful in analyzing work goals. Finally, there is much literature that suggests the major factors affecting social interaction: personal attributes and characteristics, organizational climate and structure, situational and environmental contexts of behavior, and the actors' intentions and goals. These findings were used as the basis for a conceptual framework. In the next phase of the project, the conceptual model will be used to guide the development of a job-analysis questionnaire.

Conclusions

The conceptual model describes the ways the various factors affect work behavior and the ways consequent behaviors are perceived, measured, and evaluated. Ultimately, of course, perceptions and evaluations of relative value or efficacy of various behaviors feed back into the system of determinants and affect subsequent behaviors. This model was specifically designed to reflect the complexity and pervasiveness of social interactive work behavior.

Recommendations

Job analysis methods should focus on the task and duty level for the individual position and identify those social "tasks" or "transactions" that are inherent to the position. At a minimum, social task descriptions should cover the (1) nature of the transaction, (2) object of the transaction, and (3) participants in the interaction.

CONTENTS

INTRODUCTION

Social interaction is a pervasive feature of work. Every job involves at least some social interaction, and many jobs involve nearly continuous interaction with one or many others. Jobs vary greatly in the extent and nature of social interaction.

Job analysis is the systematic collection and use of information about jobs to achieve organizational goals. Presumably, job analysis is concerned with all work behavior. Unfortunately, no current job analysis method deals adequately with the part of work behavior that involves social interaction. Suggestive examples exist in the work of Hackman and Oldham (1976), Mintzberg (1973), but these have not yet penetrated job analysis practice. Therefore, we present a review of concepts and findings pertinent to expanding the scope of job analysis.

As a means of organizing what is to follow, we begin by presenting a general model of individual work behavior. It focuses an extremely diverse literature from several disciplines into seven interrelated components. The ways contemporary job analysis methods fit into the general model will be noted along the way. We then define social interaction, review how it has been analyzed and classified, and review the factors that have been studied as being related to it. We conclude by relating the model and research findings to job analysis practice, identifying the "social task" as the unit of analysis that can improve the scope of job analysis practice.

A General Model of Individual Work Behavior

The model given in Figure 1 traces in general the determinants and consequences of any individual work behavior, but it is particularly helpful when applied to those work behaviors that are social in nature. Because of their diffuseness and pervasiveness, these behaviors are often hard to delineate, interrelate, and assess: a specific behavior may appear incidental to a work task and its form may seem arbitrary.

Component 1, in the center of the figure, represents actual work behavior, the observable actions of the worker. Here we see "what the worker does." (Direct observation is the job analysis method most clearly associated with this component.) To the left are depicted the influence on (or causes of) this behavior; to the right are the consequences.

We delineate four proximal causes of work behavior: the actor's (worker's) attributes (Component 2), the actor's immediate cognitions and intentions (Component 3), goals and tasks assigned to the actor (Component 4), and the context in which the work is done (Component 5).

Component 2 represents the actor's attributes, relatively stable characteristics of the actor, such as knowledge, skills, abilities, personality dispositions, attitudes, sociocultural characteristics, experience, and status. (The KSAs of functional job analysis and Fleishman's ability requirements analysis are associated with this component.) Because they limit the range of possible work behaviors, personal attributes are linked directly to work behavior, but they are also linked directly to Component 3.

Component 3 represents the actor's immediate, situation-specific cognitions and intentions. These are the momentary, as opposed to the more stable, determinants of the actor's behavior represented by Component 2, and as such, they reflect the state of internal dynamic processes: information processing and decision making about what to try

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to do and how to try to do it. (As a job analysis method, incumbent interviews probably reflect a great deal about the incumbent's intentions and cognitions.) The worker's thoughts and intentions are influenced not only by personal attributes and attitudes (Component 2); however, workers are influenced by various communications from the environment.
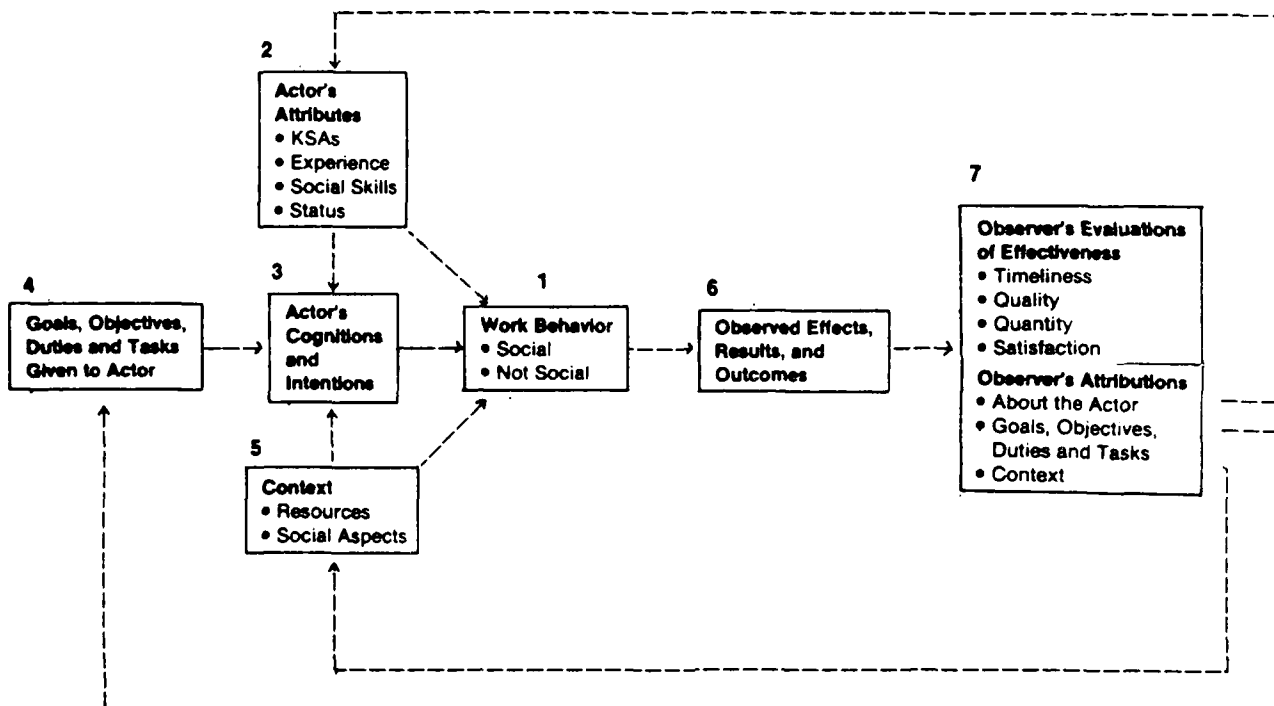

Figure 1. A general model of work behavior.

This model takes into consideration two aspects of the work environment (represented by Components 4 and 5). The goals, objectives, duties, and tasks of the position, as communicated to the actor, are the content of Component 4. These have a direct link to the actor's cognitions and intentions, but what the actor tries to do may not be the same as what was assigned--goals must be interpreted and may be modified in light of other influences on the actor's information processing and decision making. Goals (and objectives, duties, and tasks) thus affect work behavior indirectly through the actor's cognitions and intentions. In this way, they are distinguished from other aspects of the work environment, which affect work behavior both directly and indirectly.

Component 5 covers the major part of the work environment, the context in which work is done. It includes the resources available to do the work, in the form of materials, equipment, time, money, and information. It includes physical constraints and institutional structure. It also includes many social aspects of work, including others role expectations about what the actor should do, status relationships between the actor and others, communications media, and the presence, number, and nature of other people involved in the work. Context has a direct impact on both the actor's cognitions and intentions (Component 3) and the observed work behavior (Component 1). (Task

inventories and functional job analysis are job analysis methods that link goals (Component 4), context (Component 5), and results (Component 6.)

The results of one's work, the observable effects, outcomes, and products, are depicted in Component 6. As examples, an assembled motor, a typewritten form, and an applicant interviewed for a job are results of work behavior. These are the outcomes that can be directly measured or counted.

Observers' evaluations of and attributions about actors' behaviors and work outcomes are depicted in in Component 7. Particular behaviors may be considered effective or ineffective, efficient or inefficient, appropriate or inappropriate. Observers also make causal attributions about work behaviors and the results. An observer might attribute an effective outcome to the actor ("She was extremely skillful"), the goal ("The goal was challenging but attainable"), or the context ("The resources were plentiful"). To the extent that results and evaluations are communicated to workers or cause adjustments in the work environment, they affect future behaviors. (As a job analysis method, the critical incident procedure focuses mainly on results and attributions about results.)

These seven components serve to differentiate and interrelate many classes of concepts and factors pertinent to understanding work behavior and, therefore, to improving methods of job analysis. Let us now briefly note the place of some social aspects in the general model.

Social Aspects in the General Model of Work Behavior

Much work behavior is innerently and obviously social. Usually it involves some kind of social interaction, which can be classified as to whether it involves dependence on others (e.g., receiving instructions from a supervisor; seeking support, advice, or resources), interdependence (e.g., collaborating with a peer; exchanging information), or independence (e.g., counseling a potential recruit; making criticisms or suggestions; giving presentations). Other work behavior may be less obviously social, but it may be relevant to work or work outcomes nevertheless (e.g., presenting status cues through dress or bearing). We will consider all job-related social behaviors, ignoring nonsocial behaviors and behaviors that are not job-related. The focus, however, will be on social interactions.

Any work behavior may vary due to any of the other factors depicted in the model. But variation in the social aspects of work behavior may be especially great because of the complexities of social interaction and the nonprescriptive character of much social behavior. Thus, to the extent that variation in social behaviors contributes to effectiveness or ineffectiveness, to efficiency or inefficiency in job performance, we need to be able to assess the social causes, correlaries, and consequences of work.

The actor's attributes (Component 2), such as social skills, personality dispositions, and status cues, constitute one proximal cause of work behavior. Each actor brings particular social and interpersonal skills, values, and predispositions to a work situation--as well as a history of previous successes and failures. All these factors may affect work behavior directly. For example, the gregarious individual who expects to be listened to may conduct a meeting quite differently from a more reflective, questioning individual. These factors affect work directly through behavioral styles, skill limitations, etc., and indirectly through their impacts on Component 3, the actor's cognitions and intentions. For example, these same two individuals are likely to have somewhat different intentions when conducting a meeting, for example, gaining agreement on a course of action versus making a thoroughgoing analysis of action options.

These different cognitions and intentions, some of which will be social in nature, constitute a second proximal cause of work behavior. Social goals may involve managing, controlling, or convincing people, for example.

The actor's goals and cognitions reflect not only personal values, orientations, or styles; however, they also reflect influences from the social environment, the matrix of social and institutional relationships that form the context in which every individual's work is done (Component 5). These social aspects of the work context are a third proximal cause of work behavior. They are particularly numerous, and many of them will be identified in the literature review.

A fourth proximal cause is represented by Component 4. Component 4 (goals, objectives, duties, and tasks given to the actor) invites consideration of ways social components are incorporated into jobs through job requirements or institutional priorities. For example, social goals may motivate many work behaviors (e.g., satisfying a customer; maintaining good social relationships with co-workers). Conversely, meeting ostensibly nonsocial goals may require social behavior (e.g., consulting with others in the process of preparing a report or solving a technical problem). We believe this component to be a less direct cause of work behavior because its effect is mediated by the actor's cognitions and intentions (Component 3).

Finally, the general model illustrates the importance of actual outcomes and observations (Component 6), evaluations (Component 7), and feedback (links from Component 7 to Components 1, 4, and 5) for maintaining and adjusting the work behavior system. Because the system is dynamic, future behaviors will be conditioned by the consequences of current behaviors. Observers' evaluations and attributions (Component 7) about behavior can be used to (1) reward or punish workers (e.g., assign workers to more, or less, socially oriented work; be more, or less, cooperative in future interactions), (2) clarify the social demands of the work (e.g., satisfy all customers; instill appropriate attitudes in subordinates), and (3) change the context in which work is to be done (e.g., provide better resources; tighten or relax discipline). Thus, the values of causal components of future job behaviors will differ from the values of those components for current job behaviors.

The general model presented above and this brief discussion of social aspects of its components emerged from our review of pertinent literature. In the coming sections, the general model serves to organize the reporting of concepts and research findings. The model integrates several fragmented bodies of information and organizes the complexity and multiplicity of behaviors and interrelationships within the work place.

The literature search also provided interpretations of concepts and units of analysis useful for conceptualizing the range of human interactive behaviors and designing job analysis instruments that would capture this range more adequately than current job analysis methods.

RELATED LITERATURE

Aiming for breadth of coverage and wanting to include every potentially relevant factor, we surveyed the major literatures of the social, managerial, and organizational sciences, including especially psychology, sociology, communications, and their many

subfields. We sought empirical findings and theories that would describe the social interaction characteristics of work.

No single source nor any cohesive body of information was directly applicable to the analysis of job-related social interaction. The literature did, however, suggest the necessary components of any model of social interaction in the work place by providing insights into three questions: (1) What is social interactive behavior? (2) How can social interactive behaviors be analyzed and classified? and (3) What factors affect social interaction in the work place?

Social Interaction Defined

What is social interactive behavior? It has been simply described as dealing with people rather than with things or data (Fine & Wiley, 1971) or as the exchange of a series of messages between persons (Watzlawick, Beavin, & Jackson, 1967). For job-related interactions at least, direct verbal interchange is likely to be a major component. It may be an interchange between specific individuals, more generalized interchanges within a group, or the relatively unequal interchanges that occur in meetings or assemblies when one individual addresses a group. More elusive components of social interaction are nonverbal and ritualized exchanges: messages communicated through posture, tone of voice, eye-contact, gesture, stance, dress, environmental features, or use of perquisites.

Social interaction occurs in a specific time frame; that is, it is bounded by when the individuals involved make and terminate contact (Bates & Harvey, 1975). Thus, interactions can vary in length anywhere from a short few-second interchange to a meeting of several hours during which a number of people come and go.

That interaction can involve a sequence of interchanges that indicates the need for further analytic breakdown to isolate and measure meaningful segments of the interaction. The unit must, of course, be determined by the analytic goal. The literature suggests several possibilities: the message (Knapp, 1984), the uninterrupted utterance, the timed unit, and the thought unit (i.e., the minimum meaningful utterance) (Hatfield & Weider-Hatfield, 1978), and the transaction (Watson, 1982a). The last appears to be most relevant for job-related interaction.

The term transaction implies that at least two people are involved, there is at least an action and a response, and there is some purposive element. Purpose is especially relevant in any job analysis context because tasks, jobs, and organizations are designed to accomplish goals (Fleishman & Quaintance, 1985; Gael, 1983; Meister, 1985). Therefore, although Watson (1982a, 1982b) limited the transaction to two consecutive utterances, the concept should be expanded to include those utterances concerned with a single purpose or topic.

Thus, social interaction is a time-delimited, purposive transaction between two or more people.

Classification and Analysis of Social Interaction

How can the various social interactive behaviors be classified or analyzed? Two major perspectives expressed in the literature suggest ways to analyze this behavior: as a form of communication and as a type of resource exchange. The communication perspective focuses attention on the message; the exchange perspective focuses attention on the interactive process. Both perspectives are explored below.

Communication Perspective

Social interaction is a form of communication; it is not synonymous with communication. Communication is the more inclusive term; that is, communication can occur without social interaction--through printed media or television, for example. Bates and Harvey (1975) suggest that social interaction be restricted to those interactions where immediate feedback between participants is possible. Their approach would disallow letters, memoranda, electronic mail, and indirect communication through an intermediary, but it would include telephone, teleconference, and real-time computer interactions. (See Kiesler, Siegel, & McGuire, 1984, for a discussion of computer-mediated interaction.)

However, more than just the transmission of message content is involved. A message's significance is affected by how the message is transmitted, who is involved, and the circumstances surrounding the transmission of the message (Knapp, 1984). Greenbaum (1974) suggested a number of these dimensions: channels, participants, degree of systematization, dependence on authority, nature of objectives, interface with the environment, and message flow direction. In attempting to deal with this complexity, researchers have made various distinctions. In general, they have distinguished between the content and relational aspects of interactions (e.g., Penley & Hawkins, 1985; Watzlawick et al., 1967; Watson, 1982a), content and form of communications (Johnson, 1984), and meaning and content (Knapp, 1984; Ridder, 1984), though empirical distinctions are much more difficult to make.

Classifications of communications range from the general to the relatively concrete and situation specific. Greenbaum's (1974) functional classification tends toward the general end of the continuum: informative (of task-relevant content), integrative (amount of cooperative or assisting content), regulative (degree to which the message follows and reflects prescribed organizational channels and modes), and innovative (degree to which communication is filtered to suppress, distort, or bias content). Another relatively general classificatory scheme is Nieva, Fleishman, and Rieck's (1978) taxonomy of team behaviors, which can be applied to social communication as well as other types of job-related behavior: orientation (task-relevant information exchange), organization (coordination, direction), adaptation (elevation, readjustment), and motivation (task orientation, developing and reinforcing goals and norms, balancing team and personal goals, resolving performance relevant conflicts).

The following are more concrete and situation-specific classifications. In a leader-supervisor context, Penley and Hawkins (1985) distinguished task communications, career communications, personal communications, and communicative responsiveness. An earlier but similar approach by Katz and Kahn (1966) distinguished between those communications directed upwards and those directed downwards in an organizational hierarchy. Supervisors' downward communications involve job instructions, job rationales, information on organizational processes and practices, performance feedback, and goal indoctrination; subordinates' upward communications are about themselves, co-workers and problems, organizational practices and policies, and what needs to be done and how it should be done. Finally, Fine and Wiley (1971) posited a more generally applicable typology, a hierarchy of increasingly complex and inclusive interactions ranging from serving and taking instructions or helping on the bottom to mentoring at the top--all in a job-related context.

Communications can be described in terms of the participants. Those between members of specific dyads, most especially supervisors and subordinates, have received extensive attention. Supervisor-subordinate communications have often been studied in

terms of their attributes: degree of openness, accuracy, directionality (vertical or lateral), redundancy, and formality (e.g., O'Reilly, 1977; O'Reilly & Roberts, 1977b, Tushman, 1979b).

Communications have been described in terms of mode (written, face-to-face, telephone, computer-mediated) (Kiesler, Siegel, & McGuire, 1984; O'Reilly & Roberts, 1977a, Roberts & O'Reilly, 1974), frequency of contact, identity of the initiator of the interaction (Eisenberg, Monge, & Farace, 1984) or the use of various strategies, such as summarizing or gatekeeping (the selective passing on of information) (Jablin, 1979; Penley & Hawkins, 1985; Schuler, 1979; Roberts & O'Reilly, 1974).

Rsearch has also focused on the power (or control) dimension (see Brass, 1984; Jablin, 1979). For example, particular communicative actions can be categorized as dominant, structuring, equivalent, deferential, or submissive (this scheme, suggested by Bateson and expanded by Ellis, is cited in Watson, 1982a, 1982b). Using this categorization, Watson, 1982a, 1982b) coded sequential utterances in an interaction, categorizing each pair as symmetrical (i.e., of the same type), complementary, or transitional (i.e., one is neutral), and then looked for patterns in the coding. Jablin noted in his 1979 review that power and status effects had been an important focus for research.

In spite of these various classificatory and descriptive systems, communication is difficult to measure. In developing their questionnaire, Roberts and O'Reilly (1974) discarded content items because respondents had so much trouble answering them. More recently, Penley and Hawkins (1985) noted the difficulty respondents had in separating the content and relational aspects of communication because of the close interpenetration between them. An examination of the categories of communication proposed above illustrates this conceptual difficulty in separating content from the relational aspects of interaction. Nevertheless, as Muchinsky (1977a) urged in his replication study of Roberts and O'Reilly's work, there should be continued efforts to measure content as well as purpose. Also, it is important to measure communication behavior itself: "measures of communication behavior rather than communication outcomes . . . would better enhance our understanding of the relationship between communication and behavioral outcomes" (Alexander & Penley, cited in Penley & Hawkins, 1985, p. 311).

Exchange Perspective

The communication and the exchange perspectives are complementary rather than exclusive. From both functional and systemic points of view and on both individual and aggregate levels (group, organization, society), they provide ways to look at what is happening when people interact on the job.

From an exchange perspective, social interaction involves the exchange of information, affect, status, goods, money, or services (e.g., Foa & Foa, 1980; Knapp, 1984; Nord, 1980; Reason, 1980; Tichy, Tushman, & Fombrun, 1979). An exchange of information, goods, or services is likely to be central to a job-related transaction. Actors either provide or receive some resource, over which they may have varying degrees of control (Reason, 1980); they also assess costs and benefits to the interacting parties (Fidler & Johnson, 1984; Nord, 1980). In addition, the resource flow, which may be either uni- or multidirectional, and the relative costs of communicative options may be considered.

Prescribed exchanges within or between hierarchically organized groups in an organization tend to be cooperative; that is, they are made in terms or larger organizational goals and they are not necessarily reciprocal or mutual (Argyle &

Henderson, 1985; Bates & Harvey, 1975; Nord, 1980). Reciprocity is maintained at the organizational level through the payment of money (in wages and salaries) and the awarding of status. Systems of unprescribed or unformalized exchanges may also operate within an organization--often tacitly condoned by the power structure (Zurcher, 1983). Here one would expect to find reciprocity operating in terms of goods, services, and affect (friendship).

In sum, many schemes have been advanced for categorizing social interaction: occurring in real time, it may vary with respect to channel, the number and nature of participants, systematization, objectives, content, mode, relational constraints, and exchange dynamics.

Factors that Influence Social Interactive Behavior

Many factors affect social interactions in the work place and here they are reviewed in correspondence with the general model of work behavior presented at the outset.

Personal Characteristics

Personal characteristics (Component 2 of Figure 1) have major influences on interactive behaviors. This component includes the characteristics, attributes, and interpersonal skills and styles of the actor but not the surrounding milieu inhabitants, who compose part of the organizational environment. Much of the literature on this subject is evaluative or prescriptive in orientation: it focuses on effective leadership or supervisory styles (e.g., Hall, 1974; Jablin, 1979, to name only two examples of the extensive literature on leadership). There is also evidence connecting personal characteristics to particular roles. For example, Roberts and O'Reilly (1979) studied isolates and participants in three high-tech military organizations in terms of demographic characteristics such as age, experience (both organizational and job tenure), and even size of the community where the actors were raised. They concluded that it was "possible to differentiate individuals who occupy different communication roles on the basis of intrinsic and response variables" (p. 54). Researchers have examined personal characteristics in relation to a number of communication variables. Lincoln and Miller (1979) examined the effects of demographic variables (authority, education, race, sex, branch assignment) on networks or instrumental and primary ties in five professional organizations. Keller and Holland (1983) measured the need for clarity, degree of self-esteem, and orientation toward innovation of innovators and communicators in three R&D organizations. Boundary-spanning stars in both internal and external networks were investigated by Tushman and Scanlan (1981a, 1981b) in terms of perceived competence and influence.

Interpersonal style and motivational factors have also been examined in relation to social interaction. Schuler (1979) examined desire to interact, communicative responsiveness, and communicative initiative; Athanassiades (1974) investigated the relationships between women's achievement and security needs and the amount of information distortion in upward communication. Hall (1974) looked at the effects of degree of exposure and feedback on effectiveness in managerial communications. The Ohio State leadership studies under Stogdill identified consideration and initiating structure as important dimensions in interpersonal relations. These last two dimensions have been incorporated into many studies (e.g., Penley & Hawkins, 1985).

Individuals may also vary in the extent to which they use various interaction strategies, such as keeping or summarizing information; they may differ in preferences about, for example, desire for mobility or interaction (Roberts & O'Reilly, 1974). Also,

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individuals high in need achievement are less interested in social communication and people with high security and self-actualization needs may have lower volumes of communication than do those who seek social and ego gratification (Roberts & O'Reilly, 1979).

Interaction styles have also been examined. A problem with examining such characteristics is to classify and differentiate styles. Wiggins (1979) proposed a circumplex model of social interaction variables composed of four sets of bipolar traits. Several subsequent studies (Wiggins, 1980, 1982; Wiggins & Broughton, 1985) discussed applications and modifications of this scheme, which, because it lends itself to the delineation of interactive styles, suggests the possibility of identifying more (or less) effective behavior in specific situations.

Actors' Intentions and Goals

Component 3 of Figure 1 pertains to cognitions and goals. Goals may be either immediate or long term. Some goals may have been prescribed formally by the organization; others may have been prescribed less formally or explicitly. Still others may reflect the actor's personal or professional beliefs or understandings about what should be done. In a specific situation, the actor may be pursuing goals connected with his or her own duties and obligations or simply be responding to others needs to discharge their own duties and obligations. Three concepts (norm, role, and information processing) help to place actors' intentions and goals in a conceptual framework.

A norm is an internal, individual prescription for behavior (for oneself or another) that is situationally contingent or specific. (When we speak of societal norms, we are referring to generalizations made from what we can infer about individuals' norms from their behavior or statements.) A role is a cluster of norms that relate to a particular type of behavior or function--in organizational, not individual, terms (Bates & Harvey, 1975). The precipitating factor for behavior, however, is the situation. An actor sees a need to act because of a need to discharge some obligation such as gathering information, mediating a dispute, asserting control, requesting assistance, or merely responding to the actions of another. Actors' knowledge (of their organizations goals and missions, their own duties, responsibilities, tasks, technical and social knowledge, and their memories of past similar experiences) helps them define appropriate roles for themselves in any particular situation. Once that is done, reference to the situation allows them to select the most appropriate norms for the situation. For example, when faced with an emergency situation where a decision must be made about an airplane having an in-flight technical problem, a particular individual may quickly identify his role as expert. That tells him that his role is that of information provider, not decision maker. Reference to the situation (e.g., reported problem, time constraints) and his own technical knowledge, experiences, and past observations of others in similar situations enable him to select the appropriate strategies for obtaining and passing on the information, the appropriate way to present it, whom it should be presented to, and the appropriate demeanor to assume during this time. To restate, norm selection is a way of determining the most appropriate actions once role and situationally specific intentions have been identified. In the process, there is constant reference to the actors knowledge and the particular situation.

Situational Context/Environment

Component 5 of Figure 1 contains the largest collection of factors that are posited to influence social interactive behavior. As stated earlier, the situational context guides actors in the selection of appropriate norms for action, helps to focus their attention on

the relevant aspects of the context (Salancik & Pfeffer, 1978), and directly constrains that behavior. There are both immediate and general situational contexts. The immediate situational context (a chance encounter, a formal meeting, a request, a crisis, etc.) allows actors to identify appropriate roles and situationally specific intentions. The general environment provides the cues that enable the actors to select the appropriate norms to guide their actions (Thomas & Griffin, 1983).

Four of the six overlapping, nonexclusive ways of looking at the human environment identified by Moos (1973) (see Insel & Moos, 1974) have been helpful in trying to understand the relevant aspects and they are used here to organize the presentation of the literature.

1. Physical Environment. There is evidence that the physical environment can act to facilitate or inhibit social behavior (e.g., Becker, Gield, Gaylin, & Sayer, 1983; Oldham & Brass, 1979). For example Keller and Holland (1983), in studies of R&D departments, found a correlation between propinquity and the building of tight bonds within groups--due possibly to the provision of sites and opportunities for interaction. Propinquity may also help determine other aspects of interactive behavior; for example, interaction medium (i.e., whether telephone, face-to-face, or written communication is used) and frequency of interaction (i.e., how easy is it to make contact). But most important are the cues the physical environment gives about the social environment (Thomas & Griffin, 1983; Zalesny, Farace, & Kurchner-Hawkins, 1985). For example, the furnishings and relative isolation of high-level executives provide opportunities for privacy and cutting down on distractions, but these perquisites also symbolically reinforce the view of executives work as complex and important and, thus, condition how others behave toward them. According to Zalesny et al., (1985), "the symbolic aspects of the environment have been inadequately addressed."

Also important can be the location of the particular work site (in a metropolitan area close to experts, government officials, the public, and resources; in a rural area; on a ship or a submarine; or in a foreign country) (Zurcher, 1983). Not only might the immediate situational contingencies vary, but so might the mix of individuals available for direct contact and the constraints on interaction (consider, for example, a ship as opposed to a land-based work location).

2. Behavioral Setting. The behavioral environment refers to the social setting as well as the physical surroundings. For example, does the interaction occur in a formal meeting or in an informal encounter? Was the content highly structured and pre-determined, as in formal training or indoctrination sessions (Trice & Beyer, 1984; Zurcher, 1983)? Were there time constraints or time pressures? How many people were present (two, several, many)? Was the group homogeneous or mixed (measured by any of a number of indexes, such as age, rank, sex, group affiliation)? Did it occur on or off the work site? How available were support resources such as clerical help, communications, or food?

3. Organizational Structure. Organizational structure has received a great deal of attention as a situational construct (e.g., James & Jones, 1976; Inkson, Pugh, & Hickson, 1970; Roberts, O'Reilly, Bretton, & Porter, 1974; Tung, 1979). As a result, it receives extended coverage here. Suggested dimensions are size, formalization, configuration, degrees of centralization and specialization, and interdependence of the organizational components (James & Jones, 1976). More specifically for our purposes, organizational structure implies a hierarchical arrangement of units and patterned relationships among the units. Organizations prescribe (both formally and informally) arrangements of positions, statuses, roles, channels of communication, and authority (Zurcher, 1983), thus

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making it "possible to design and conduct predictable, stable social relationships in a short period of time" (Nord, 1980, p. 135). Organizations also have implicit (and sometimes explicit) rules for communicating, which specify the appropriate time, place, quantity of interaction, type of action, medium, flexibility, duration for any particular speaker, audience, and topic or message (Eisenberg et al, 1984; Knapp, 1984; Schall, 1983). The actor usually learns these rules through experience, observation, and informal sanctions.

Although differing from customary usage in job analysis (McCormick, 1979), we here use position to refer to a place in a group occupied by a specific individual (Bates & Harvey, 1975). An individual may hold more than one position as part of his or her job, often at different levels of organization (for example, an individual may be both a work-group supervisor and a team member of a special task force).

The actor in a particular position will have different relationships with each individual or class of individuals in or outside of the group. These particular relationships are called status relationships. Status, a relational term, refers to relationships between particular individuals or classes of individuals, for example, the supervisor-subordinate relationship or the peer relationship. The former relationship has received much attention (e.g., Eisenberg et al, 1984; O'Reilly & Roberts, 1977b; Penley & Hawkins, 1985; Watson, 1982b; Webber, 1970; Zalesny et al., 1985). Jablin (1979) reviewed the literature and reported a wide range of findings related to communication between supervisors and subordinates: the large proportion of time (1/3 to 2/3) supervisors spend interacting with subordinates, the dominance of the face-to-face mode, the task-oriented and impersonal nature of most interactions, the greater likelihood that supervisors will initiate interactions, the likelihood that subordinates will seek help from superiors rather than from peers, the different criteria used by management and workers to describe and judge themselves, the constraints on the behavior of both subordinates and superiors imposed by role-set membership, etc. Jablin stated that the primary foci of research into superior-subordinate communication had been the moderating influence of trust, the distorting effects of semantic-informational distance, and power and status effects.

As stated earlier, role is a concept that allows us to talk in functional terms about the cluster of norms related to a particular type of behavior (data collecting, for example) that is related to an organizational goal or function. An actor may, however, have a number of different role relations with the same individual (or class of individuals) and perform the same role in relation to a number of different individuals. An norms may vary, depending on the particular referents (role, position, status, group) and the role expectations (both formal and informal) for the actors in those particular relationships (Bates & Harvey, 1975; Schall, 1983; Turner, 1982; Zurcher, 1983). Communication rules characteristically vary with position in the group, status of the actors, and the particular roles the actors are playing in the specific interaction.

A social network refers to the pattern of communication links organization members maintain among themselves and with relevant outside groups (Burt & Minor, 1983; Tichy et al, 1979; Tushman, 1977, 1979a; Tushman & Scanlan, 1981a, 1981b). These linkages can be intragroup, intergroup, intraorganizational, or extraorganizational (Katz & Tushman, 1979; Roberts, O'Reilly, Bretton, & Porter, 1974; Tushman, 1979b).

Tichy et al (1979) described links in terms of clarity of expectations, intensity of relationships, degree of reciprocity, and degree to which individuals share multiple links; they described structural characteristics of the network in terms of size, density, clustering, openness, stability, reachability, and centrality. They also identified a number of specialized communication roles: individuals centrality within the network, access to

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or control of information or work flow, the number of internal and external links they maintain, the criticality of particular focus points in the network, the transaction alternatives of focal persons, and whether and how they served to link groups or organizations. Individual network members have been described in terms of their network roles: innovator/communicator, boundary spanner, internal or external star, isolate, or participant (Keller & Holland, 1983; Roberts & O'Reilly, 1979; Tushman & Scanlan, 1981a, 1981b).

Finally, organizations and their members must deal with the external environment. Osborn and Hunt (1974) identified three levels of this external environment: the task environment, comprising those organizations which must be dealt with in order to function; the aggregate environment, comprising such entities as interest groups or constituencies; and the macro environment, referring to the broader economic, educational, legal-political, and sociocultural conditions obtaining in the greater society. The operations of these extra-organizational structures may be closely or loosely integrated with the operation of the organization. They may involve formal, legal, binding links; they may constrain he operation of the organization; or they may simply provide the external societal climate for operating.

4. <u>Organizational Climate</u>. Jurkovich (1974) proposed a typology of organizational environments that seems to apply more to what we call organizational climate. He contrasted general characteristics (e.g., complex or noncomplex, routine or nonroutine, organized or unorganized) with degree of change (high or low, stable or unstable). Organizational climate refers to the unstated cues to the organizational rules and priorities for operating within a particular organization. Much that goes on within any organization operates according to these unwritten rules or standards. There are common understandings about the way things are done, the leeway an individual has for action, what is encouraged and what is discouraged. Individuals learn by observing, experiencing, and interpreting how things are done, what happens, and the consequences. They also may be cued in by others.

Organizational climate, like organizational structure, is not immune to extra-organizational climate. For example, a cross-cultural comparison (England, United States, and Ghana) of the frequency and importance of social interaction in manufacturing companies showed that there are sociocultural differences among nations: social interaction was most important in Ghana, least important in England (Earley, 1984).

We usually describe the organizational climate using attributional or perceptual terms such as level of uncertainty, stability, complexity, supportiveness, and morale (Bourgeois, 1980; Duncan, 1972; Muchinsky, 1977b, O'Reilly & Roberts, 1977a; Tushman, 1979b).

In looking at the organizational climates of eight different organizations, Moos and his colleagues (Moos 1973; Insel & Moos, 1974) identified three other common dimensions: relational, personal development, and maintenance. The first refers to the density and type of relationships a person establishes; the second to the extent to which the environment encourages self-development and growth; and the third to the extent to which organizational goals, rules, and priorities are clear and orderly. Also, there are the questions of how much flexibility in role performance is allowed (e.g., Zurcher, 1983; Roberts & Sloan, 1985) and the degree of discrimination or autonomy (Athanassiades, 1974). Schneider (1975) gives an extended treatment to the issue of how people develop and use perceptions of organizational climate, a view that has been updated by Schneider and Reichers (1983).

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As noted at the beginning of this section, environmental influences on social behavior are numerous. This overview has barely scratched the surface.

The Relationship of Outcomes and Evaluations to Social Interaction

Finally, Component 7 of Figure 1 contains some distal influences on social interaction. The reason for considering outcomes and evaluations of behavior is to be able to identify and measure the job-relevant dimensions of social interaction. Organizations are dynamic systems, cultures that are "created, sustained, transmitted, and changed through social interaction--through modeling and imitation, instruction, correction, negotiation, story-telling, gossip, remediation, confrontation, and observation--all activities based on message exchange and meaning assignment, that is, on communication" (Schall, 1983, p. 560). For actors, the awareness of the consequences of previous actions is a significant element in the processing of the social information they receive (Salancik & Pfeffer, 1978). Thus, the organization itself, the actors' knowledge base, perceptions of the organizational environment, and personal attitudes, skills, and styles are constantly being adjusted because of the observations and evaluations of both the actors own and others behavior and behavioral consequences.

Two job-related outcome dimensions are measured again and again in the research literature: job satisfaction and role performance (e.g., Eisenberg et al., 1984; Penley & Hawkins, 1985; Roberts & O'Reilly, 1979; Schuler, 1979). Eisenberg et al. (1984) related these dimensions to perceptual congruency (accuracy, agreement, and perceived agreement) about communication rules among supervisors and subordinates. Penley and Hawkins (1985) related them to the personal dimensions of initiating structure and consideration and to five categories of communication. Schuler (1979) looked at these dimensions in connection with the communication dimensions of directionality, formality, information overload, desire to interact, communicative initiative, and communicate responsiveness. He suggested that role perceptions (role anxiety and role ambiguity) intervene in the communication-outcome relationship. Roberts & O'Reilly (1979) looked at job satisfaction and performance in connection with various demographic variables and two communication roles (isolate and participant) in a Navy population located at three high-tech sites.

Some research has occurred at the group rather than the individual level of analysis (e.g., Tushman, 1979a; Morrow, 1981). Tushman, using assessed performance level to identify his study group, looked at high-performing units that could be categorized as either research or technical service projects. He was able to conclude that "for high-performing subunits, communication structure is contingent on the subunits work" (p. 24). That is, high-performing research groups had higher levels of intra-project communications, wide-spread discussion, and group decision-making. High-performing technical service project teams relied more on supervisor direction and involvement for success, and they had higher levels of inter-project communication. A number of studies (Eisenberg et al., 1984; Hatfield & Huseman, 1982; Morrow, 1981; O'Reilly & Roberts, 1977b; Tushman, 1979b) have investigated Tushman and Nadler's (1978) congruency hypothesis that subunits are more effective when their communication practices match the level of uncertainty they find in the environment.

Snyder and Morris (1984) looked at organizational performance levels, focusing on four communication variables (policies and procedures, group information exchange, supervisors as communicators, and performance feedback) to explain variation in 12 district offices of a state social-service agency. Brass (1984), focused on organizational network characteristics, looking for patterns of influence and power that could be related

to a number of assessed network characteristics: centrality, closeness, control, criticality of focal points, transactional alternatives, and distance from organizational boundaries. He also questioned whether instigation and termination of interaction could relate to power and influence.

As can be seen, these many approaches to studying communication and social interaction or social relationships tend to bypass the behavioral aspects of communication--except for attributional descriptors--and focus on the relationships between outcomes or evaluations (of relationships or work) and personal (or situational) characteristics. This pattern is understandable as a function of some very practical analytical goals (e.g., to uncover effective and ineffective patterns of communicating or interacting; to identify the consequences of specific interactive or communicative styles; to understand how various work situations and environments affect individual, group, and organizational operations). This pattern is also understandable because of the methodological problems of measuring such behavior (e.g., the time and resources to directly observe and record all the varieties of social interaction in the work place; the necessity for having the meaning of much behavior interpreted by the actors; the variety of behavioral options open to actors because of the great number of functions that interaction can serve and the very few jobs in which interactive behaviors are rigorously prescribed). The research does provide us with insight into the complexity of the social interactive process, however,

As seen in the literature above, there is a tremendous diversity of concepts and findings related to social interaction. There are certain to be linkages, however, that were not uncovered in this literature survey, a survey that had to be broad rather than deep. We sought to cover the entire range of potentially pertinent literature, looking for kinds of questions, variables, and perspectives that might help in developing a framework for measuring job-related social interaction.

JOB ANALYSIS OF SOCIAL INTERACTION CHARACTERISTICS OF WORK

All of the above literature contributed to our general model of work behavior, which identifies those components of work that must be considered in any comprehensive job analysis method, but especially one which seeks to include coverage of social interaction. It helped us identify useful concepts for understanding and interrelating the various social components of work behavior (e.g., norm and role). It suggested practical levels for analysis. We will first summarize these findings briefly and then examine their implications for job analysis.

Summary and Conclusions

Social interaction is typified by (but not limited to) direct verbal exchange between two or more people occurring face-to-face or in some other real-time communication medium (telephone, video-conference, etc.). This includes both the manifest content and the latent meanings of the communications. When you consider the many symbolic, ritual, or nonverbal exchanges, there might be hundreds or even thousands of social interactions in a typical workers work day.

Communications and exchange perspectives have been used to analyze and classify social interactions. Social interaction may be characterized in many ways: the extent to which it is informative, integrative, regulative, or innovative (Greenbaum, 1974); the extent to which it involves orientation, organization, adaptation, or motivation (Nieva et

al., 1978); its direction--downward, lateral, or upward (Katz & Kahn, 1966); its content--task or job instructions, goal indoctrination, job rationales, information on process and practices, information on policies, career-related interactions, or personal interactions (Fine & Wiley, 1971; Katz & Kahn, 1966; Penley & Hawkins, 1985). Power and control implications of interaction might be categorized with regard to structuring, superior, equivalent, deferential, or submissive relations (Watson, 1982a, 1982b). Finally, the exchange aspects of social interaction might be categorized with respect to the object of exchange, the direction of exchange, and the costs and benefits of the exchange (Fidler & Johnson, 1984; Foa & Foa, 1980; Knapp, 1984; Nord, 1980; Reason, 1980; Tichy et al., 1979).

The bulk of the literature review dealt with factors that affect social interaction. Although personal attributes, characteristics, and organizational climate play key roles in any complete account of the social determinants of work behavior, our review emphasized the actors intentions and goals as well as the situational and environmental contexts of behavior. The physical and behavioral settings for interaction and aspects of organizational structure are the factors most amenable to observation by job analysts.

Implications for Job Analysis

Job analysis has always been a complicated field, and with the inclusion of specific reference to social interaction it becomes even more complex. Social aspects of work are pervasive, in more than just the sense that all work is goal-directed and exists in a social context. A comprehensive job analysis procedure, attuned to all social interaction aspects of work behavior, would analyze and describe the following: Component 1, the social behaviors and interactions involved in producing the work; Component 2, the actor's social and interpersonal skills as well as social statuses brought to bear on performing that work; Component 3, the actor's social cognitions and social intentions in performing the work, as influenced by Component 4, the social goals, objectives, duties, and tasks communicated to the actor by both formal and informal means; and Component 5, the rich social context (comprising the social cues present in the physical, behavioral, and organizational structural environments) in which the actor's preparation for work and actual work behavior are carried out. Finally, both Component 6, results of work behavior, and Component 7, evaluations of those results, are needed to complete the comprehensive picture.

No single contemporary job analysis method encompasses all of these components. Having now seen the high complexity of the concepts and findings, it is easier to understand why the social aspects of work behavior are covered so haphazardly. Not all work behaviors that have social components are obviously or inherently social. There is a wide range of behavioral options from situation to situation and from person to person. Definition, description, and delimitation of social interaction poses problems because of the incorporation of social componets into many behaviors. Nonsocial, inherently social,a nd incidentally social components of work mix readily, in proportions that vary over time and people.

To begin to rectify this state of affairs, we therefore propose that researchers should concentrate on a minimum set of factors that would allow a job analysis procedure to genuinely incorporate social interaction. These recommendations are based on the understanding of work behaviors and the interrelations of the seven components depicted in the general model. They constitute a model that focuses on social interaction.

As a unit of analysis, we recommend focusing on the "social task," an action or action sequence including an interpersonal transaction designed to contribute to a specific end result or the accomplishment of an objective. The social transactions included in the analysis of a worker's position should be limited to those inherent to the position. The nature thee social transactions should be described with respect to the following factors: (1) Does the transaction involve giving, receiving, or exchanging information? Is the actor the initiator or recipient of the transaction? (2) Is the object of the transaction orders and directions, instruction and teaching, advice and assistance, feedback, or technical information (3) Who does the transaction involve? In the immediate work group, does it involve the actor's superior, peers doing the same or similar work, peers doing complementary work, subordinates, or others? In other work groups, does it involve superiors, peers, subordinates or others? Does it involve others elsewhere in the organization, or others outside of the organization? Thus, consideration of the literature we have reviewed and the general model of work behavior has led us to a model of social interaction that emphasizes communication roles and content.

These seem to us to be the minimum items of information needed to analyze the social interaction aspects of jobs. They were chosen because they relate directly to the identification of specific goals and intentions, situational constraints, and behavioral options. Less directly, but in all probability, they would also lead to the gathering of information about the adjustment processes of observation, evaluation, and feedback.

Note that the climate of the work group or organization and the personal attributes of the worker are not included in this minimum set. Their inclusion would provide additional valuable information, but at the cost of still greater complexity. Climate is omitted because it is a subjective or perceptual quality, difficult for job analysts to assess. Personal attributes are omitted because job analysis is most often intended to measure the requirements of work. The measured requirements may later be used as the base from which to infer the personal characteristics required of the worker.

With respect to job analysis in general, we recommend methods that treat individual positions independently, regardless of whether they share the same job title. We also recommend job analysis methods that focus at the task and duty level, making specific reference to the actual content of the work to be done. Depending on the purpose for doing job analysis, one might aggregate across positions within the same job title or across tasks and duties, in order to get more molar results. The aggregation of data can be done late in the analysis procedure (rather than early, as in directly estimating ability requirements, for example). We prefer late aggregation because the social aspects of positions are the lest well objectified. Particularly important social information is apt to be lost if aggregation occurs too early.

Observational and interview-based methods of job analysis can be easily modified to focus on social transactions. Observation schedules, sampling plans, and reporting forms can be modified to direct the observer's attention to social interactions. Interviewers can ask direct questions. The information so gathered will improve the accuracy and completeness of job descriptions, personnel specifications, and training course content.

Modification of questionnaire-based job analysis methods is also feasible and may avoid the well-known problems of subjectivity and bias that pertain to direct observation and interviewing. Task inventories might be constructed to specifically include social tasks. For example, transactions such as "counseling a poor performer" and "responding to a request for information about an accident" can be presented as a task inventory items, and rated on time spent and importance. Likewise, the frequency and nature of contact

with various categories of people can be captured with appropriately phrased inventory items.

Thus, it appears feasible to collect information about social interaction character-istics of jobs more systematically than has been done in the past. This in turn should lead to improved personnel management practices in the selection, classification, training, and utilization of personnel.

To conclude, the "social task," a social transaction characterized with respect to its nature, content, and participants, appears to hold the best promise for providing job analysis information that encompasses social interaction aspects of work.

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